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ABSTRACT

This paper provides guidelines for the use of videotape recordings for systematic instruction in functional skills for students with moderate to severe disabilities. Four examples illustrate use of videotapes to teach community skills (e.g., crossing a street) to secondary students with moderate disabilities; self care skills (e.g., zipping a jacket) to elementary students with moderate disabilities; and food preparation tasks (e.g., making macaroni and cheese in a microwave) to secondary students with moderate disabilities, and both self-care and domestic skills to students with autism. Suggested steps for teaching using videotapes include the following: (1) select a target skill; (2) construct a task analysis; (3) determine the viewpoint of the videotape; (4) shoot the videotape; (5) determine if the videotape should be edited; (6) select the instructional procedure; (7) decide who will operate the videotape; (8) determine the data collection schedule; and (9) determine the teacher's role in delivering consequences. (DB)

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USING VIDEO STRATEGIES TO TEACH FUNCTIONAL SKILLS TO STUDENTS WITH MODERATE TO SEVERE DISABILITIES

The use of videotapes as an educational tool has become commonplace in in educational settings. In recent years, two techniques for using videotapes have been gaining recognition in special education settings. In video modeling, teachers use videotapes to demonstrate tasks for students. The student can watch the task performed by another individual (known or unknown), the student can watch the task as it would appear if the student performed it by him or herself, or the student can watch his or her own performance completing the task. In addition to performing tasks, videotapes also can be used to show a student modeling appropriate behavior. In video prompting, the videotape only is shown to the student when the student needs assistance. The advantage is that the videotape can be started and stopped as needed to allow the student the opportunity to imitate the video model when the student does not know what to do next. Systematic instruction is an effective way to teach new skills to students with disabilities. Systematic instruction includes response prompting procedures, such as graduated guidance, most to least prompting, least to most prompting constant and progressive time delay, and simultaneous prompting (Wolery, Ault, & Doyle, 1992). These strategies have been shown to be both effective and efficient in teaching functional skills to students with moderate disabilities. Because students make few errors with these strategies (typically less than 20%) and only receive the amount of help they need when they need it, students experience success. The examples cited in the following paragraphs come from studies that teachers conducted during the instruction of students with moderate disabilities in classroom settings as part of their certification coursework in a university teacher preparation program in Moderate/Severe Disabilities. Each of the teachers conceived the idea for using videotapes within the context of systematic instruction to teach functional skills listed on the IEPs of their students and made the videotapes with little or no assistance.

As described by Branham, Collins, Schuster, and Klienert (1999), Teacher I taught three community skills to 3 secondary students with moderate disabilities. The skills were (a) cashing a check, (b) crossing a street, and (c) mailing a letter. The videotape that she shot herself showed a peer without disabilities performing the three tasks. She prepared the videotape for instruction by inserting still frames in the videotape. The resulting videotape showed a peer performing each step of the task analysis separated by 10-s intervals of still frames. During daily sessions, each participating student, one at a time, took a videotape of the target task to a room adjoining the life skills classroom and watched it with the teacher. Using a constant time delay (CTD) procedure, Teacher I presented the videotape in the following manner. On the first day of instruction, the student watched a videotaped model of the entire task as the teacher described each step. Using a 0-second response interval, the student immediately repeated each step after the teacher. On all subsequent days, the teacher used a 3-s response interval, asking the student what they would do first in the task and then waiting 3 seconds for the student to respond while the videotape showed a blank still frame. If the student answered correctly, the teacher praised the response as the tape showed the step. If the student answered incorrectly or failed to respond, the teacher prompted the student to watch the step on the videotape as she described it and then waited for the student to repeat what she said. The teacher then asked, "What's next?" and repeated the procedure for the next step until the student finished watching the videotape of the entire task. In addition to teaching with the videotape each day, Teacher I also practiced some of the skills in classroom simulations with the students. Whether or not they received additional instruction during classroom simulations, Teacher I took the students on Community-Based Instruction (CBI) each week to practice the skills at two or more post offices, banks, or streets. During classroom simulations and during CBI, the teacher gave each student the opportunity to perform his or her target task, again using the CTD procedure. As with the videotape, the teacher waited 3 s for the student to perform each step of the task before verbally prompting the student if they did not know what to do. The only difference was that students watching the videotapes only had to verbally state the task while students had to watch the teacher's model and physically perform the task during classroom simulations and CBI. Each student mastered their targeted task in 4 to 7 instructional sessions. Teacher I concluded that the use

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of a videotape with the CTD procedure in combination with classroom simulations and CBI was an effective and efficient way to teach the target task. In particular, use of the videotape allowed the teacher to conduct instruction on community skills even on days when she did not have time to conduct classroom simulations and go on CBI.

In a study by Norman, Collins, and Schuster (2001), Teacher II taught three self-care skills to 3 elementary students with moderate disabilities. The target tasks included (a) cleaning sunglasses, (b) putting on a wristwatch, and (c) zipping a jacket. With assistance from a technology expert at a university, she shot the videotape of each skill from a subjective viewpoint so each student could view the skill performed on the videotape as they would see it when they performed it themselves. The final videotape showed a preview of each task from start to finish and then videoclips of each step of the task separated by 15-s still frames. The directions for each step were printed on the videotape as each step was shown, accompanied by a male or female voice stating the steps. Each day, the students sat in a circle around the television with their materials in front of them. They all watched the preview together. Then, using a CTD procedure, Teacher II presented the videotape in the following manner with each student, one at a time. On the first day of instruction, using a 0-second response interval, the student immediately performed each step with the videotape. On all subsequent days, the teacher waited 5 s for the student to initiate a step and 15 s for a student to independently complete a step while the still frame showed on the videotape. If the student performed the step correctly, the teacher praised the response, forwarded the videotape, and waited for the student to attempt the next step. If the student performed the step incorrectly or failed to respond, the teacher prompted the student by having the student watch the step performed on the videotape and then waited for the student to imitate the video model. If the student still performed the step incorrectly, the teacher paused the videotape and physically guided the student through the step before continuing. The teacher then asked, "What's next?" and repeated the procedure for the next step until the student finished the task. Once a student in the group reached criterion of 100% correct independent responses for one day, the teacher dropped the initial preview of the task. Two of the students mastered their targeted tasks in 19 to 30 instructional sessions. The third student mastered one of the skills in 31 sessions (zipper) and required a few modifications to master one of the other skills (glasses). Modifications included being reinforced for independent responses only (not prompted responses) and engaging in massed trials to practice difficult steps prior to attempting the entire task. Teacher II concluded that the use of a videotape with the CTD procedure was an effective and efficient way to teach the target tasks. In particular, use of a videotape in a small group format allowed the students to watch each other receiving instruction and performing the tasks in addition to viewing the videotape model.

In a subsequent study by Graves, Collins, Schuster, and Klienert (2003), Teacher III taught three food preparation tasks to 3 secondary students with moderate disabilities. The tasks included (a) cooking noodles on a stove, (b) making macaroni and cheese in a microwave, and (c) making a peanut butter and jelly sandwich on the countertop. With assistance from a technology teacher in her school and his students, she shot the videotape of each skill from a subjective viewpoint. The final videotape showed a preview of each task from start to finish and then videoclips of each step of the task separated by still frames. The directions for each step were printed on the videotape as each step was shown, accompanied by a male or female voice stating the steps. Each day, the teacher taught the students one at a time in the kitchen of the life skills classroom. Each student, in turn, stood in front of a television placed on the countertop and watched a preview of the target task. Then, using a CTD procedure, Teacher III presented the videotape in the following manner with each student. On the first day of instruction, using a 0-s response interval, the student immediately performed each step with the videotape. On all subsequent days, the teacher gave the student 5 s to independently initiate a step and 20 s to complete the step. If the student performed the step correctly, the teacher praised the response as she forwarded the tape. If the student performed the step incorrectly or failed to respond, the teacher prompted the student by having the student watch the step on the videotape and then waited for the student to imitate the video model. The teacher asked, "What's next?" and repeated the procedure for the next step until the student finished the task. All of the students mastered their targeted tasks in 7 to 12 instructional sessions. Teacher II concluded that the use of a videotape with the CTD procedure was an effective and efficient way to teach the target tasks. In particular, she found that the students were motivated to learn the skills from the videotape and generalized them to their homes where they were able to prepare similar foods with similar materials during their summer break.

As described by Webster, Collins, Towne, and Smith (2003), Teacher IV took advantage of her student teaching experience to teach skills with videotapes to 2 students with disabilities in each of two settings. In the elementary setting, she taught a self-care skill (i.e., zipping a jacket) to 2 students with autism. In the secondary setting, she taught a domestic skill (i.e., folding a towel) to 2 students with moderate disabilities. To make the videotape, the supervising teacher videotaped the target students performing the target task with physical assistance from Teacher IV. This allowed the students to see themselves successfully modeling the task before receiving instruction. In both settings, Teacher IV combined video modeling with instruction using a system of least prompts (SLP) procedure in the following manner. At the teacher's request each day, each student watched the videotape showing them being prompted to perform the target skill. When the videotape ended, Teacher IV told the student it was time for them to practice the skill just viewed on the videotape. She then waited 5 s for the student to initiate and 10 s for the student to complete the first step. If the student performed it correctly, she praised the student. If the student failed to respond within the set time or began to perform the step incorrectly, Teacher IV gave the first prompt from a hierarchy of prompts by telling the student what to do. If the student still could not perform the step, she modeled the step. If the student still needed assistance, she offered physical guidance. Teacher IV repeated this process for each step of the chained task. By the end of Teacher IV's student teaching experience, all of the students mastered or showed progress on their targeted tasks and seemed to enjoy tasks taught with a video model over tasks taught with SLP alone. The addition of the videotape was inexpensive and took little time each day for viewing.

The following guidelines are offered for teachers who are interested in using videotapes in the systematic instruction of students with disabilities. The first step of any instructional program is to *select a target skill*. It should be one that is functional, or immediately useful and meaningful, to the student. This can be done by conducting an ecological inventory (Browder, 2001) of activities needed in a student's daily environments (community, school, home, leisure, or vocational settings). Each of the teachers described in this article selected skills from the students' IEPs that had been generated through an ecological inventory approach and interviews with parents. Chained tasks (those made up of a series a sequential steps) are well-suited to video instruction.

The second step is to *construct a task analyses*. This can be generated by watching a videotape of a task as it is performed. It is preferable, however, to construct the task analysis first, since this provides a script for taping and ensures that the camera will be focused so as to catch the performance of each step on tape. The best way to construct the task analysis is for the instructor to perform the task and either write down or dictate to a scribe or tape recorder the steps as they are performed. Following the ecological inventory approach, the steps should follow the format in which students will need to perform them in their natural environments. For example, Graves et al. (2003) noted that the microwave and measuring cups in the home of a student differed from the microwave and measuring cups used in the classroom setting and adaptations had to be made to make them similar (i.e., placing stickers to mark correct times and measurements). Once the task analysis is constructed, the teacher may use it to edit the videotape (e.g., insert still frames between steps, add visual print or audio descriptions of steps to the videotape). In addition, the task analysis will be used as a data collection sheet to monitor progress once instruction begins.

The third step is to *determine the viewpoint of the videotape*. The instructor has three options in selecting the viewpoint of the videotape. First, the instructor may wish to videotape a person performing the task who can do it fluently and serve as a good role model. While this can be another adult, using a same-age peer (especially one viewed as having "high status") may be more motivating to a student as a peer may be perceived as someone whose behavior they want to model. Second, the instructor can videotape the skill from a subjective viewpoint, allowing students to see the task performed as it will look when they perform it themselves. This has the advantage of allowing students to check their progress against the videotape (e.g., hands correctly placed on jacket to engage zipper) and allowing close-up shots that show fine details (e.g., labels written on cooking products). If videotaping the task while performing it is cumbersome, the instructor may want to have an assistant videotape over the instructor's shoulder as the instructor performs the task. The third choice is for the instructor to videotape the student performing the task. The may be motivating to students because it allows them to see themselves being successful. Because the student has not yet learned the task when the videotape is made, the instructor will need to prompt the student through the task (e.g., give verbal directions, model the task, or physically guide the student through the task). Again, an assistant who can do the videotaping may be desirable if the instructor is busy providing prompts.

The fourth step is to *shoot the videotape*. The best part of shooting a videotape is that the instructor can rewind and retape when errors occur. Also, the finished videotape can be viewed immediately to see if it is satisfactory. In spite of this, the instructor or the assistant who does the taping needs to be well-acquainted with the task analysis and should determine in advance if the entire task will be taped without stopping or if each step will be individually taped. For some tasks, it makes sense to stop the tape during downtime (e.g., waiting for water to boil on the stove). While even an amateur can make a videotape that can be used effectively during instruction, help often can be found within the school setting. For example, Teacher III received videotaping assistance from the instructor of a video class in the school where she taught. For some tasks, a tripod can be used to provide stability. For others, a hand-held camera will allow the instructor to zoom in at angles that best show the performance of a task. In addition, the instructor may want to add an audio description of each step as the videotape is shot.

The fifth step is to *determine is the videotape should be edited*. Once the videotapeis shot, the instructor must decide how it will be viewed by the students. Again, there are three options. First, the instructor can show the task in its entirety and then allow the student to perform it. For some students, this is adequate. Students can be given the option of watching the videotape several times before attempting the task or of returning and rewinding to steps they need to view again as they perform the task. Second, the instructor may want to edit the videotape to show individual steps with a pause between each so the student can perform each step as it is viewed before seeing the next step. Inserting still frames in the videotape saves the instructor from having to be present to stop and start the videotape between steps. This works well with systematic prompting procedures, such as time delay. Third, the instructor may want to have two copies of the videotaped task, one that is shown in its entirety as a preview and one that is divided into steps with pauses to be viewed as the task is performed. Teachers who have editing skills and access to the necessary equipment may be able to edit their own tapes. Others may seek the assistance of those who have experience, such as the instructor of a video class. In addition to editing, the instructor also will want to determine if graphics or audio should be added. While not necessary, such cues may facilitate learning of the target task while encouraging the learning of related skills, such as learning to read the words that describe the steps of the task.

The sixth step is to *select the instructional procedure*. The advantage to systematic instruction is that it allows students to experience success while only receiving the amount of help they need as they learn a new skill. There are several systematic instructional procedures that have been shown to be effective in teaching students with disabilities. For example, Teachers I, II, and III used a constant time delay procedure, in which they allotted a uniform interval of time for the student to attempt to perform each step of the task before they used the video to prompt the student. If the student knew what to do, they performed the step and moved on. If the student did not know what to do, they waited until they viewed the step performed on the videotape before continuing. Teacher IV used another systematic procedure, the system of least prompts. After having students watch a preview of the task, she gave them the opportunity to perform it and only interrupted the student with a prompt when they student did not know what to do next. When she prompted, she began by using the least intrusive prompt possible from the hierarchy (verbal direction) and only moved to a more intrusive prompt (model or physical guidance) when necessary for the student to respond correctly. Another procedure that teachers might pair with video instruction is the simultaneous prompting procedure. With this procedure, the teacher would begin each session by asking the student to perform the task. If the student is unable to complete the task, the teacher would then ask the student to complete the task while watching the video. This process would continue until the student could perform the task with viewing the videotape.

The seventh step is to *decide who will operate the videotape*. Each of the teachers used as examples here controlled the operation of the videotape player. This allowed them to ensure that the student was ready for instruction and attending before starting the videotape. It also allowed the teacher to pause, rewind, or fast forward the videotape, as necessary, during instruction. It is possible, however, that some students with disabilities may have the skills to operate the videotape player themselves. If this is the case, it would free up teacher time. For example, the teacher could ask the student to first watch the videotape alone and then join the student when they are ready to perform the task they have viewed. Other students may have the skills to pause, rewind, and fast forward the videotape independently and, thus, perform the task while watching the videotape without the assistance of the

teacher. Teachers also should consider sharing the videotape with parents in order to encourage generalization of the skill to the home setting.

The eighth step is to *determine the data collection schedule.* The teacher will want to monitor progress by collecting data on student performance. If the teacher is involved in daily instruction with the videotape, the teacher can monitor at that time. If systematic instruction is used, the procedure will dictate the type of recording procedure. For example, a teacher using a constant time delay procedure would record whether the student responded correctly or incorrectly before or after the prompt on each step of the task. A teacher using a system of least prompts procedure would record the level of assistance the student needed to perform each step (e.g., independent, verbal, model, physical). A teacher using a simultaneous prompting procedure would record whether or not the student performed each step correctly during test or probe trials but would not have to record data during videotape trials. If the student views the videotape and performs the task without teacher assistance, the teacher could record data periodically (e.g., once per week). Regardless of the method or scheduling for collecting data on performance, the teacher should attempt to collect data periodically in the natural environment (e.g., community, home) to ensure the student can perform the task in the setting where it will be needed. For example, Teacher I collected data during CBI each week, and Teacher III asked parents to collect data in the home over the summer break.

The ninth step is to *determine the teacher's role in delivering consequences*. During initial learning of a new task, feedback is important. When students perform a step or task correctly, they need to be reinforced. This could be verbal praise from the teacher as well as natural consequences, such as getting to consume a food item they have prepared. Likewise, when students make errors, they also need feedback, especially if watching the video model does not result in a correct response. In this case, the teacher may want to intercede and help the student perform the correct response before allowing them to proceed. For example, when students made errors, Teacher II physically guided students through difficult steps before allowing them to proceed with viewing the videotape. In providing consequences, teachers may want to consider exposing students to other nontargeted information that is beneficial (Collins, Fetko, & Land, 2002). For example, after a student prepares a food product, the teacher could praise the student and state information about the product (e.g., low in fat, contains beneficial vitamins).

Based on the four examples described here, it is clear that the used of videotape can be effective in the instruction of skills with students with moderate mental retardation. In particular, there are specific advantages in that the use of videotapes can free up teacher time, can facilitate generalization to the real world, can be motivating to students, and can be replayed repeatedly. Since most classroom teachers have access to video cameras, video players, and televisions, the cost of production of a simple videotape can be inexpensive. Using the guidelines suggested here and using the cited examples as a beginning for finding ways to use videotape, teachers should explore using videotape with systematic instruction in teaching skills to students with moderate disabilities.

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